

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claims 1-23 canceled.

24. (Currently Amended) A garment or material thereof for metabolic cooling and for insulation of a user in at least a cold ambient environment below a phase transition temperature of a thermal storage material, comprising:

a buffering thermal storage material capable of storing thermal energy as the latent heat of phase change located in the garment or material thereof;

said thermal storage material comprising a phase change material having at least one actual phase transition temperature between 41.9 and 80.6 degrees Fahrenheit; and

said thermal storage material having a thermal mass of the phase change material at least equivalent to a thermal loading of the phase change material of ~~12.33~~ 13.5 to 1120.08 BTU per cubic foot of the garment or material thereof.

25. (Previously Presented) The garment or material thereof of claim 24, wherein: said thermal storage material comprises a mixture of at least two phase change materials having at least two different transition temperatures; or

said thermal storage material comprises at least two layers of phase change materials with different transition temperatures.

26. (Previously Presented) The garment or material thereof of claim 24, wherein said phase change material undergoes a solid-solid transition or a solid-liquid transition.

27. (Previously Presented) The garment or material thereof of claim 24, wherein said thermal storage material comprises a phase change material absorbed in particles of a superabsorbent material.

28. (Previously Presented) The garment or material thereof of claim 24, wherein said phase change material is micro encapsulated.

29. (Previously Presented) The garment or material thereof of claim 24, wherein said phase change material is encapsulated.

30. (Previously Presented) The garment or material thereof of claim 24, wherein said phase change material is in pellets.

31. (Previously Presented) The garment or material thereof of claim 24, wherein said phase change material is contained in a cellulose matrix.

32. (Previously Presented) The garment or material thereof of claim 24, further comprising a thermal control layer located on a first side of said thermal storage material adapted to face a wearer and an insulative layer located on a second side of said thermal storage material adapted to face the ambient environment, said insulative layer being of greater insulative value than said thermal control layer.

33. (Previously Presented) The garment or material thereof of claim 32, wherein the insulative layer comprises a semipermeable membrane which is permeable to water vapor but impermeable to liquid water.

34. (Previously Presented) The garment or material thereof of claim 24, wherein said garment comprises an article of clothing.

35. (Previously Presented) The garment or material thereof of claim 34, wherein said article of clothing is selected from the group consisting of a shirt, a jacket, trousers, a blanket, a gaiter, a facial mask, a hat and an earmuff.

36. (Previously Presented) The garment or material thereof of claim 34, wherein said article of clothing is in the form of a removable liner configured to be worn in combination with other clothing.

37. (Previously Presented) The garment or material thereof of claim 34, wherein said article of clothing comprises a diver's wetsuit.

38. (Previously Presented) The garment or material thereof of claim 34, wherein said thermal storage material is contained within closed internal spaces of the article of clothing or is incorporated into a fabric of the article of clothing.

39. (Previously Presented) The garment or material thereof of claim 24, wherein said garment comprises an article of footwear.

40. (Previously Presented) The garment or material thereof of claim 39, wherein said article of footwear comprises a ski boot.

41. (Previously Presented) The garment or material thereof of claim 39, wherein said article of footwear comprises a shoe.

42. (Previously Presented) The garment or material thereof of claim 39, wherein said article of footwear comprises a ski boot liner, a sock or a removable liner configured to be worn in combination with other footwear.

43. (Previously Presented) The garment or material thereof of claim 39, wherein said phase change material is enclosed in internal spaces within said footwear.

44. (Canceled)

45. (Previously Presented) The garment or material thereof of claim 24, wherein said phase change material comprises an organic material.

46. (Previously Presented) The garment or material thereof of claim 24, wherein at least one said phase change material has an actual phase transition temperature in a range from 41.9 degrees Fahrenheit to 71.1 degrees Fahrenheit.

Claims 47 – 57 canceled.

58. (Currently Amended) The garment or material thereof of claim ~~50~~ 24, wherein said phase change material comprises an organic material.

59. (Currently Amended) An article of footwear for metabolic cooling and for insulation of a user in at least a cold ambient environment below a phase transition temperature of a thermal storage material, comprising:

a buffering thermal storage material capable of storing thermal energy as a latent heat of phase change located in the article of footwear;

said thermal storage material comprising a phase change material having at least one actual phase transition temperature between 41.9 and 80.6 degrees Fahrenheit; and

said thermal storage material having a thermal mass of the phase change material at least equivalent to a thermal loading of the phase change material of ~~12.33~~ 13.5 to 1120.08 BTU per cubic foot of the article.

60. Canceled.

61. (Currently Amended) A garment or material thereof for metabolic cooling and for insulation of a user in at least a cold ambient environment below a phase transition temperature of a thermal storage material, comprising:

a buffering thermal storage material capable of storing thermal energy as the latent heat of phase change located in the garment or material thereof;

said thermal storage material comprising a phase change material having at least one actual phase transition temperature between 41.9 and 80.6 degrees Fahrenheit; and

said thermal storage material has a thermal loading of phase change material from ~~1.22~~ 1.34 BTU to ~~94.03~~ 10.3 BTU per square foot of a surface area of the garment or material thereof.

62. (Currently Amended) The garment or material thereof of claim 61, wherein:

at least one phase change material has an actual phase transition temperature in a range from 41.9 degrees Fahrenheit to 71.1 degrees Fahrenheit; ~~and~~
~~—said thermal storage material has a thermal loading of phase change material from 10.3 BTU to 46.67 BTU per square foot of a surface area of the garment or material thereof.~~

Claims 63-64 are canceled.

65. (Previously Presented) The garment or material thereof of claim 61, wherein the thermal storage material comprises an aggregate of phase change material particles incorporated into a bonding material.

66. (Currently Amended) The garment or material thereof of claim 61, wherein the thermal storage material comprises a dispersion of a phase change material in a coating material.

67. (Previously Presented) The garment or material thereof of claim 61, wherein the thermal storage material comprises a dispersion of a phase change material that was incorporated into a paste while in a liquid state during lamination.

68. (Previously Presented) The garment or material thereof of claim 61, further comprising a wicking element located in the garment or material thereof.

69. (Currently Amended) An article of bedding for metabolic cooling and for insulation of a user in an ambient environment, comprising:

a buffering thermal storage material capable of storing thermal energy as the latent heat of phase change located in the article;

said thermal storage material comprising a phase change material having at least one actual phase transition temperature between 41.9 and 80.6 degrees Fahrenheit; and

said thermal storage material has a thermal loading of phase change material from ~~1.22~~ 1.34 BTU to ~~840~~10.3 BTU per square foot of a surface area of the article.

70. (Currently Amended) The article of claim 69, wherein:

at least one phase change material has an actual phase transition temperature in a range from 41.9 degrees Fahrenheit to 71.1 degrees Fahrenheit; ~~and~~

~~said thermal storage material has a thermal loading of phase change material from 1.22 BTU to 10.3 BTU per square foot of a surface area of the garment.~~

Claims 71-76 are canceled.

77. (Currently Amended) A garment or material thereof for metabolic cooling and for insulation of a user in at least a cold ambient environment below a phase transition temperature of a thermal storage material, comprising:

a buffering thermal storage material capable of storing thermal energy as the latent heat of phase change located in the garment or material thereof;

said thermal storage material comprising a phase change material having at least one actual phase transition temperature between 41.9 and 80.6 degrees Fahrenheit; and

said thermal storage material having ~~The garment or material thereof of claim 76,~~
~~wherein the thermal storage material has a thermal loading of the phase change material of 12.33-13.5 BTU to 104.08 BTU to per cubic foot of the garment or material thereof.~~

78. (Currently Amended) A garment or material thereof for metabolic cooling for insulation of a user in at least a cold ambient environment below a phase transition temperature of a thermal storage material, comprising:

a buffering thermal storage material capable of storing thermal energy as the latent heat of phase change located in the garment or material thereof;

said thermal storage material comprising a phase change material having at least one actual phase transition temperature between 41.9 and 80.6 degrees Fahrenheit; and

said thermal storage material having ~~The garment or material thereof of claim 76,~~
~~wherein the thermal storage material has a thermal loading of the phase change material of 104.08 BTU to 300.13784.7 BTU to per cubic foot of the garment or material thereof.~~

79. (Currently Amended) The garment or material thereof of claim ~~78~~ 76, wherein the thermal storage material has a thermal loading of the phase change material of 300.13 BTU to 784.7 BTU per cubic foot of the garment or material thereof.

80. (Currently Amended) A garment or material thereof for metabolic cooling and for insulation of a user in at least a cold ambient environment below a phase transition temperature of a thermal storage material, comprising:

a buffering thermal storage material capable of storing thermal energy as the latent heat of phase change located in the garment or material thereof;

said thermal storage material comprising a phase change material having at least one actual phase transition temperature between 41.9 and 80.6 degrees Fahrenheit; and

said thermal storage material having a ~~The garment or material thereof of claim 76,~~
~~wherein the thermal storage material has a thermal loading of the phase change material of 784.7 BTU to 1120.08 BTU per cubic foot of the garment or material thereof.~~

81. (Currently Amended) The garment or material thereof of claim ~~78~~ 76, wherein the thermal storage material has a thermal loading of the phase change material of ~~1120.08 BTU to 4480 BTU~~ 104.08 BTU to 300.13 BTU per cubic foot of the garment or material thereof.

Claims 82 to 96 canceled.

97. (Currently Amended) A garment or material thereof for metabolic cooling and for insulation of a user in at least a cold ambient environment below a phase transition temperature of a thermal storage material, comprising:

a buffering thermal storage material capable of storing thermal energy as the latent heat of phase change located in the garment or material thereof;

said thermal storage material comprising a phase change material having at least one actual phase transition temperature between 41.9 and 80.6 degrees Fahrenheit; and

said thermal storage material having a thermal mass of the phase change material at least equivalent to a thermal loading of the phase change material of 13.5 BTU per cubic foot of the garment or material thereof; and ~~The garment or material thereof of claim 25, wherein:~~

said thermal storage material comprises at least two layers of phase change materials with different transition temperatures; and

a transition temperature of an inner layer of said phase change material is greater than a transition temperature of an outer layer of said layer of phase change material which is adapted to be farther from a skin of the wearer than the inner layer.

98. (Currently Amended) An article comprising a garment, an article of bedding, or material thereof for metabolic cooling and for insulation of a user in at least a cold ambient environment below a phase transition temperature of a thermal storage material, comprising:

a buffering thermal storage material capable of storing thermal energy as the latent heat of phase change located in the article;

said thermal storage material comprising a phase change material having at least one actual phase transition temperature between 41.9 and 94.1 degrees Fahrenheit; and

said thermal storage material has a thermal loading of phase change material from ~~1.22~~ 1.34 BTU to ~~25.63~~ 10.3 BTU per square foot of a surface area of the article.

99. (Previously Presented) The article of claim 98, wherein the article comprises an article of bedding.

100. (Previously Presented) The article of claim 98, wherein the article comprises a garment.

Claims 101-103 are canceled.

104. (Currently Amended) An article comprising a garment, an article of bedding, or material thereof for metabolic cooling and for insulation of a user in a cold ambient environment below a phase transition temperature of a thermal storage material, comprising:

a buffering thermal storage material capable of storing thermal energy as the latent heat of phase change located in the article;

said thermal storage material comprising a phase change material having at least one actual phase transition temperature between 41.9 and 94.1 degrees Fahrenheit; and

said thermal storage material has a thermal loading of phase change material from ~~12.33~~ 13.5 BTU to ~~3360~~ 1120.08 BTU per cubic foot of a surface area of the article.

105. (Previously Presented) The article of claim 104, wherein the article comprises an article of bedding.

106. (Previously Presented) The article of claim 104, wherein the article comprises a garment.